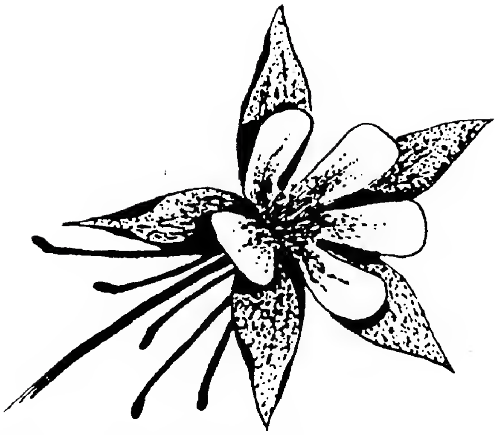
Aquilegia



Newsletter of the Colorado Native Plant Society

"...dedicated to the appreciation and conservation of the Colorado native flora"

Volume 17 Number 3 July through December 1993

Is The Endangered Species Act In Danger?

Nina Williams
Legislative Affairs Committee

The battle over our nation's strongest environmental law, the Endangered Species Act of 1973 (ESA, the Act), is heating up in Congress. The ESA is now 20 years old and up for re-authorization in the next session of the United States Congress. It is no surprise that the Act is facing strong opposition from conservative private property rights advocates such as the Wise Use Movement. High profile struggles such as old growth and northern spotted-owl conservation in the Pacific Northwest have not only fostered the false notion that jobs and endangered species preservation are incompatible, but have also triggered attempts to generate legislation that would protect endangered species only when the cost of protection does not outweigh the species' "economic benefits."

The strength of the ESA lies in its unequivocal mandate to protect "the ecosystems upon which endangered species and threatened species depend." Decisions determining which species warrant protection under the Act are to be made "solely on the basis of the best scientific and commercial data available," not on the economic consequences of such actions.

Despite its laudable mission, the ESA fails in many ways to provide adequate protection for imperiled plant species. The only endangered plants that receive protection under the Act are those fortunate enough to reside on federal land, those endangered by a project receiving federal funds, or those plant species afforded protection by state law. This last provision offers no help in Colorado where the only plant protected by state law is the ubiquitous state flower, the Colorado columbine (*Aquilegia caerulea*). Colorado state law provides absolutely NO protection for any other plant species on private land, including the 88 species identified by the Colorado Natural Heritage Program as rare. Threatened plants, which receive less protection under the Act than Endangered plants, are receiving even less protection than intended by Congress because the U.S. Fish and Wildlife Service has failed to promulgate protective regulations authorized by Congress in 1988. Furthermore, unlike wildlife and fish, only plant species or sub-species, not populations, are eligible for protection under the Act. This means that unless a plant is imperiled throughout its entire range, it can not be protected under the Act. In contrast, a threatened or endangered population of animals can be protected under the Act even if viable populations of the same species exist elsewhere.

Inequitable treatment of plants has been the norm since the ESA became law in 1973. Year after year, plants in need of immediate attention remain on the "wait list" while animals get listed (protected through designation as Threatened or Endangered). Plants consistently receive fewer recovery dollars than their warm and fuzzy animal

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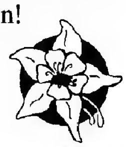
EDITOR'S NOTE

Many of you have been wondering why you haven't received any recent issues of *Aquilegia*. Well, it's been a busy year for the editorial committee; we also oganized the annual meeting! The lesson for us was clear . . .don't sign up for both jobs in the same year! Our intention was to publish four quarterly issues in 1993. We missed the third issue, so we increased the size of the fourth issue and hope to resume a bimonthly schedule in 1994 (six issues). We apologize to all of you members who have been waiting patiently now for many months.

You will note below that we have new Board members and officers. Feel free to call a Board member who lives near you with any questions. If you would like to become involved with a committee, call the Chairperson listed below and volunteer! All of the Colorado Native Plant Society's work is accomplished by volunteers. Get involved, it's fun!



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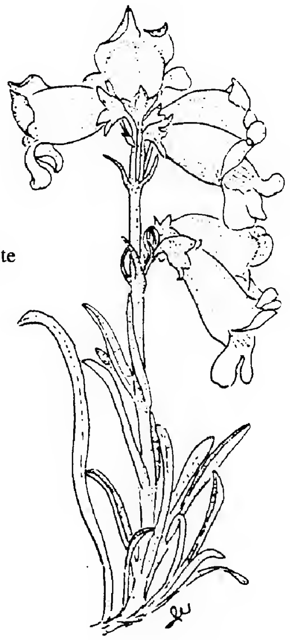
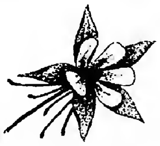


Penstemon hallii
Artist: Janet Wingate

Aquilegia



Aquilegia is published four to six times per year by the Colorado Native Plant Society. This newsletter is available to members of the Society and to others with an interest in native plants. Contact the Society for subscription information.

Articles from *Aquilegia* may be used by other native plant societies or non-profit groups if fully cited to author and attributed to *Aquilegia*.

The Colorado Native Plant Society is a non-profit organization dedicated to the appreciation and conservation of the Colorado native flora. Membership is open to all with an interest in our native plants, and is composed of plant enthusiasts both professional and non-professional.

Please join us in helping to encourage interest in enjoying and protecting Colorado's native plants. The Society sponsors field trips, workshops and other activities through local chapters and statewide. Contact the Society, a chapter representative, or committee chair for more information.

Schedule of Membership Fees

Life	$250
Supporting	$ 50
Organization	$ 30
Family or Dual	$ 15
Individual	$ 12
Student or Senior	$ 8

Membership Renewal/Information

Please direct all membership applications, renewals and address changes to the Membership Chairperson, Colorado Native Plant Society, P.O. Box 200, Fort Collins, CO 80522. Please direct all other inquiries regarding the Society to the Secretary at the same address.

Newsletter Contributions

Please direct all contributions to the newsletter to:

Tamara Naumann
940 Quinn Street
Boulder, CO 80303

Short items such as unusual information about a plant, a little known botanical term, etc. are especially welcome. Camera-ready line art or other illustrations are also solicited.

Please include author's name and address, although items will be printed anonymously if requested. Articles submitted on disks (IBM or Mac) are appreciated. Please indicate word processing software and version. Flat ASCII files are fine, too.

Officers

President	Tom Ranker	492-5074
Vice-President	Janet Hughes	933-2425
Secretary	Mark Gershman	443-9365
Treasurer	Myrna Steinkamp	226-3371

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Ann Armstrong (95)	Boulder	494-0545
David Buckner (95)	Boulder	494-3231
Janet Coles (95)	Boulder	440-0595
Mark Gershman (94)	Boulder	443-9365
Andrew Kratz (95)	Lakewood	238-6317
Tamara Naumann (95)	Boulder	440-8933
Chris Pague (94)	Lyons	492-4719
Tom Ranker (94)	Boulder	492-5074
Velma Richards (94)	Englewood	794-5432
Nina Williams (94)	Boulder	499-9858

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Fort Collins	Mike Scott	490-1788
Yamparika	Reed Kelley	878-4666
San Juan	Gretchen Van Reyper	835-3268

Committees

Conservation	Sally White	697-5439
Editorial	Tamara Naumann	440-8933
Education	Andrew Kratz	238-6317
Field Trips	Rick Brune	238-5078
Field Studies	Mary Edwards	233-8133
Hort/Restoration	Dorothy Udall	482-9826
Legislative Affairs	Nina Williams	499-9858
Membership	Myrna Steinkamp	226-3371
Publicity	VACANT	
Workshops	Susan Eubank	277-9458

ANNOUNCEMENTS

TIME TO RENEW YOUR MEMBERSHIP!

Once again, it's reminder time—have you paid your CONPS dues? Dues notices were sent out recently. Please remember that dues cover a calendar year, except that new members who join in the second half of the year are credited for the following year's dues, as well. Your mailing label on this newsletter shows the year THROUGH which you are paid—i.e., PAID THRU 93 means you should remit your dues for 1994!! If you have sent your payment within the past few weeks, the label could be incorrect due to the lead time required for the newsletter.

The Membership Committee Chair, Myrna Steinkamp, also notes that the post office will not forward bulk mail, so if you move and want to continue to receive CONPS mailings, it is essential that you notify the Society (P.O. Box 200, Fort Collins, CO 80522-0200).

An important reminder...

The post office will soon require us to use 9-digit ZIP codes. Please help us by providing your complete, 9-digit ZIP code on your renewal form. If you do not know your 4-digit ZIP suffix, check some of your junk mail, contact your local post office, or ask your mail delivery person. Thanks!

Packera werneriifolia
Artist: Janet Wingate

LEADERS NEEDED FOR WILDFLOWER WALKS

If you like to share you knowledge of native plants, consider leading a wildflower hike next summer. Myrna King is seeking volunteers to lead two one-day wildflower identification hikes, one in early spring and one in early summer. Distance should be about four miles round trip, but could be changed, if appropriate. The location is the leader's choice.

If this appeals to you, contact:

Myrna King
816 East 4th Avenue
Denver CO 80218
777-1273.

Spring is just around the corner...

Potentilla nivea
Artist: Janet Wingate

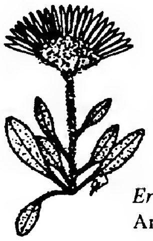
ATTENTION:
NATIVE PLANT GROWERS AND SELLERS

An effort is being made to assemble a directory of people and/or businesses in the state or region who grow or market native plant materials. The directory could serve several purposes: 1) it could serve as a marketing tool, potentially connecting growers with potential customers, 2) it could facilitate communication and cooperation among people in the native plant business, fostering the exchange of ideas, techniques, etc., 3) it could evolve into a sort of information clearinghouse for native plant propagation and marketing information.

If you are involved in the native plant industry and are interested in participating in compiling (or contributing to) a directory, send information on your business or interest to:

Gretchen Van Reyper
2126 L75 Road
Austin CO 81410.

Include your name, the name of your business, address, telephone, special interests or expertise (e.g., seed collection, liner production, retail sales, etc.), a business card, and a catalogue or price list for your products. Any ideas for this compilation would also be appreciated! It would be great to get it out in time for Spring of 1994.



Erigeron simplex
Artist: Janet Wingate

NATIVE PLANT SEED EXCHANGE

If you are interested in receiving a list of native plant seeds, or if you are interested in donating seeds for exchange, contact:

Craig Alseike
3256 Salem Street
Aurora, Colorado 80011
(303) 366-0587.

THE JOHN W. MARR FUND
An Endowment for the Support of Small Grants Research On Colorado's Native Flora

As you complete your 1994 membership renewal notice (mailed recently to you under separate cover), you will find a space to mark if you wish to make a donation to the John Marr Fund, in addition to your normal dues payment. You may wonder, "What is this all about?"

In March, 1990, the John W. Marr Fund was established by the Colorado Native Plant Society to provide a means of funding small grants for research on Colorado native plants. The fund honors the late Dr. Marr, the Society's first President and a former professor at the University of Colorado.

The aim of the fund is to encourage, through small grants, research on the biology and natural history of Colorado native plants. Guidelines specifically state that field or laboratory studies are eligible for consideration; no restrictions are placed on the subject matter, type, or place of study.

Guidelines for the Marr Fund state that research awards are "not to exceed the accumulated interest earned by the MARR FUND, together with any additional funds appropriated from the Society's Treasury specifically for a given award." Generally, awards will be less than $500, and "(t)he Society's funding may represent the sole support of a project, may be part of joint funding agreed upon with other granting groups or organizations, or may be used to supplement other funding obtained by the investigator(s)." An award from the John Marr Fund is made solely at the discretion of the Board of Directors of the Colorado Native Plant Society.

Thus far, several grants have been made under the auspices of the John Marr Fund. For example, Tim Hogan of the University of Colorado received funds to help support a botanical survey of the Flattops mountains in western Colorado. Another award went to Dr. James Locklear, Curator of the Dyck Arboretum of the Plains at Hesston, Kansas, for a survey of historic and potential locations of *Asclepias uncialis*, a rare plant known only from the eastern plains of Colorado. Articles in past issues of *Aquilegia* have reported on results of such research projects. Upcoming issues will feature research results on *Asclepias uncialis* by Jim Locklear and on *Spiranthes diluvialis* by Anna Arft. CONPS is one of a very few organizations which sponsor small grants research on native plants.

The Society made an initial contribution to establish the Marr Fund, and directed that the fund be supplemented by gifts and donations solicited from the members. Thus, as you complete your dues renewal form, we ask that you consider making a donation for this worthwhile purpose. Many small contributions add up, allowing us to achieve as a group what we cannot do as individuals. All donations specified for the Marr Fund are maintained in a special interest-bearing account, separate from the Society's general funds.

Contact a Board member if you would like more information on the John Marr Fund.

Used Book Donations and Sales Will Benefit the John W. Marr Fund

Beginning in 1994, the Colorado Native Plant Society will begin collecting and selling used books to increase the endowment of the John W. Marr Fund. Consider making a tax deductible donation of your unwanted books pertaining to botany, ecology, and natural history of the western U.S., biographies of Western botanists and explorers, etc. Your generosity will benefit Colorado's native flora. Many important western botany books are out-of-print: Harrington's *Manual of the Plants of Colorado,* Hermann's *Carices of the Rocky Mountains and Colorado Basin*, etc. Used books are the only source for these, and many other, important publications. We will accept and offer to CONPS members any books on the subjects listed above or related topics. Donated books with no relation to CONPS activities may be sold or traded to obtain books more relevant to CONPS members' interests.

Bring your donations to local chapter meetings, Board meetings, or to the annual meeting. If you have a large number of books, call Rick Brune at 238-5078 to make arrangements for pick-up.

As a service to CONPS members, we will try to match available used books with members' "want lists." If there is an out-of-print book you are searching for, send us a 3x5 card with the author's name in the upper left corner, title(s), amount you are willing to pay, and your name, address, and phone number. Use a separate card for each author. Send the card to:

Rick Brune
2060 Garland
Lakewood CO 80215-1630.

Needless to say, we make no guarantee as to results or efficiency of process!

ESA, *continued from front page*

companions. Although only 49% (402 of 812) listed organisms in the United States are plants, 90% of the species scientifically determined to warrant listing are plants that remain unlisted. 900 of the 2,300 plant species proposed for listing have been on the wait list since 1976. In our western region, only 19 of Utah's 100 proposed species are listed, and no species are listed in Wyoming and Montana. Colorado has 13 listed species; 60 await listing or further study. Funding for rare plant protection constituted only 3% of the total dollars spent on endangered species recovery in 1991.

COLORADO'S ENDANGERED FLORA

ENDANGERED	THREATENED	CATEGORY 1*
Astragalus osterhoutii Osterhout milkvetch	*Eutrema penlandii* alpine fen mustard	*Eriogonum brandegei* Brandegee wild buckwheat
Echinocereus triglochidiatus var. *inermis* spineless hedgehog cactus	*Lesquerella congesta* Dudley Bluffs bladderpod	*Gaura neomexicana* ssp. *coloradnesis* Colorado butterflyweed
Eriogonum pelinophilum clay-loving buckwheat	*Physaria obcordata* Piceance twinpod	*Penstemon albifluvis* White River penstemon
Pediocactus knowltonii Knowlton's cactus	*Sclerocactus glaucus* Uinta Basin hookless cactus	*Penstemon grahamii* Graham penstemon
Penstemon penlandii Penland beardtongue	*Sclerocactus mesae-verdae* Mesa Verde cactus	*Penstemon retrorsus* adobe beardtongue
Phacelia formosula North Park phacelia	*Spiranthes diluvialis* Ute ladies'-tresses orchid	*Phacelia submutica* Debeque phacelia
Astragalus humillimus Mancos milkvetch	Note: This list does not include 54 Category 2 species (those taxa for which status survey work is needed to determine whether listing is warranted).	

* Category 1 species have been determined suitable for listing as threatened or endangered by the U.S. Fish & Wildlife Service. They await the listing process.

Source: U.S. Fish and Wildlife Service 5/93

These statistics are disheartening, especially to botanists who have realized the value of plants for centuries. Protecting wildlife requires conservation of habitat, including plants and plant communities. Testimony in a recent hearing before the House Merchant Marine and Fisheries Committee emphasized the medicinal value of our flora. Of U.S. medical prescriptions, 33%, including codeine, morphine, and quinine, are based on plant extracts; a mere 5% of the global flora has been analyzed for medicinally valuable compounds. Dr. Eisner, Director of the Cornell Institute for Research and Chemical Ecology, testified that "Chemicals such as taxol and FK 506 (immunosuppressant) could not have been designed by human ingenuity—both compounds were totally unforeseen in chemical structure and therapeutic action."

Despite the bleak picture for plant conservation, the Endangered Species Act provides desperately needed protection for our nation's threatened and endangered species. If conservative forces are allowed to prevail in Washington, the outlook for endangered species, especially plants, will worsen. It is incumbent upon all of us to demand a strengthened Endangered Species Act as it faces reauthorization early in 1994.

Currently there are two main ESA reauthorization bills introduced in the House of Representatives, a good one and a bad one. Congressman Gerry Studds, (D-MA) has introduced **H.R. 2043**, a bill that not only strengthens the Endangered Species Act, but recognizes the need to evaluate the effectiveness of the Act in plant preservation. The Studds Bill improves the Endangered Species Act by:

1. calling for a report on whether provisions of the ESA relating to plants are sufficient for their conservation. (While this falls short of requiring equal protection for plants and animals, it is an important first step.),
2. providing financial incentives and technical assistance to private landowners to protect listed and candidate species,
3. substantially increasing funding to implement the ESA,
4. setting deadlines for completion of recovery plans and giving priority to plans that provide protection for multiple species and species most likely to benefit from recovery actions,
5. authorizing development of habitat conservation plans for candidate species, and
6. directing Federal agencies to conduct inventories of listed and candidate species on federal land.

Mr. Studds, Chairman of the House Merchant Marine and Fisheries Committee, which has jurisdiction over the Act, needs additional co-sponsors. Only two Colorado Representatives, Pat Shroeder and David Skaggs have co-sponsored this bill. The remaining four, Hefley (Colorado Springs/Canon City area), Allard (NE Colorado including Fort Collins/Greeley), McInnis (Western slope and Pueblo) and Schaefer (south Denver suburbs) are currently co-sponsoring **H.R. 1490**, the "bad" bill introduced by Congressman Billy Tauzin (R-LA). Mr. Tauzin is known for his anti-environmental stance on a variety of issues, most recently for his efforts to require the federal government to reimburse private landowners when the presence of endangered species on their land limits their development options. Although it claims to "improve and protect the integrity" of the ESA, environmental experts agree that H.R. 1490 would significantly undermine the integrity of the Endangered Species Act.

Corresponding bills have been introduced in the Senate. **S.B. 921**, introduced by

- continued on page 6

ESA, *continued from page 5*

Senator Max Baucus (D-MT) correlates with the Studds bill and is currently **unsponsored** by our Colorado Senators Hank Brown and Ben Nighthorse-Campbell. On the bright side, they have neglected to join Senators Packwood (R-OR) and Hatch (R-UT) in supporting **S.B. 1521**, the Senate version of the Tauzin bill, which would require taxpayers to foot 50% of ESA-related mitigation costs incurred by developers.

Your representatives need to hear that you expect them to protect our nation's imperiled flora and fauna. Please write to your congresspeople (hand-written letters are better than phone calls) and ask them to co-sponsor the Studds Bill (H.R. 2043), if they haven't already. Encourage them to remove themselves from the Tauzin Bill (H.R. 1490); this legislation represents a serious backslide in our progress toward ecosystem conservation.

Write to Senators Brown and Campbell. Request that they co-sponsor the Baucus Bill (S.B. 921). Remind them that the Western Governor's Association recently endorsed S.B. 921. With Congressional Representatives back in their districts for the holiday season, now is the time to make an appointment with them to discuss Endangered Species Act reauthorization. If you would like additional information on the Endangered Species Act reathorization, call Nina Williams at 303-499-9858. To receive monthly updates on the Endangered Species Act, write to Minette Johnson, Endangered Species Coalition, 666 Pennsylvania Ave. SE, Washington, DC 20003.

LETTER-WRITING TIPS:

- Identify the Bill #s.
- Be concise and to the point, and write legibly.
- Personalize your letter with issues you are especially concerned with or issues that affect you directly.
- Ask for a response.
- Address letters appropriately:

For House Bills:

The Honorable Your Representative
U.S. House of Representatives
Washington DC 20515

For Senate Bills:

The Honorable Your Senator
U.S. Senate
Washington DC 20510

It's Official! *Eutrema penlandii* Is Listed

Sally White
Conservation Committee

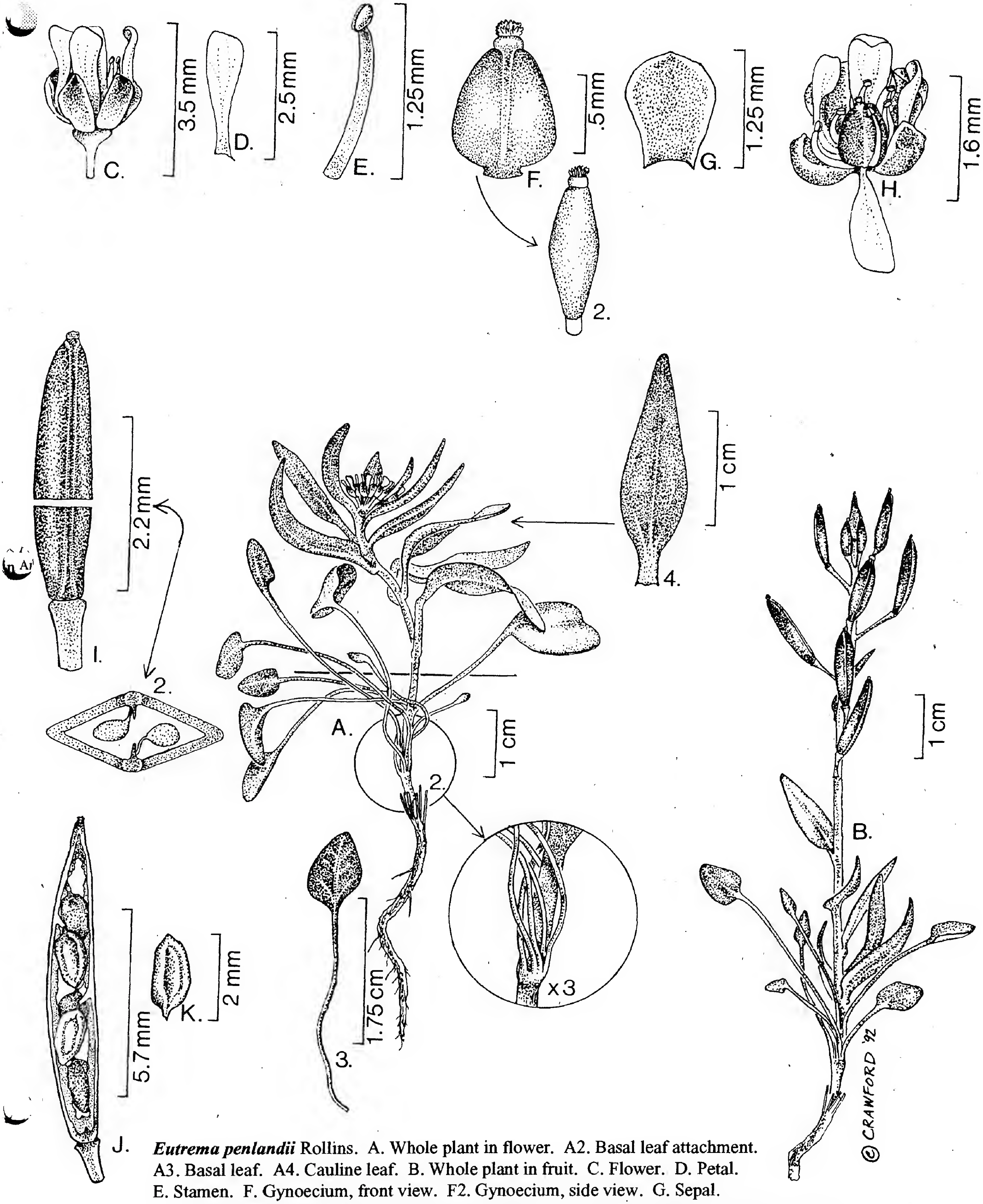
In late July, more than two and a half years after the proposed rule was published, *Eutrema penlandii*, alpine fen mustard, was officially listed as threatened under the Endangered Species Act. We appreciate the efforts of Colorado and regional staff of the U.S. Fish and Wildlife Service (USFWS) in procuring this listing, and the persistence of many CONPS members in supporting the proposal with comments, technical information, and field observations. A final sticking point for the regional office was documenting threats to the known populations. Last year, when mining claims were filed over one site and the proposed Hoosier Ridge Natural Area was withdrawn in response to protests by the mining industry, the threats to *Eutrema* became clearer. That situation and *Eutrema's* unique environmental requirements were described in an article by Nina Williams (*Aquilegia* Vol.16 No.5).

In the final rule, published in the Federal Register for July 28, 1993 (40539), the Fish and Wildlife Service recognizes *Eutrema penlandii* as a distinct species, but adds that the listing will remain valid even if the taxon is later considered a subspecies of *Eutrema edwardsii*, its nearest relative. *E. penlandii* is the only representative of its genus in the lower 48 states and, with *E. edwardsii*, is extremely disjunct from other representatives of the genus which occur in Asia.

The ruling notes that although population size estimates range from 10,000 to 16,000 individuals, the species occupies only about 500 acres, is found only in the Mosquito Range, and is far from secure. Its habitat specificity and the small extent of subpopulations make *E. Penlandii* vulnerable to recreation and mining activities that disrupt surface drainage patterns. About half the populations are on patented mining claims (private lands that were once public) and have roads or off-road vehicle trails to them. The listing confers little or no protection to *Eutrema* populations on private land, according to the ruling. Existing conservation measures are extremely limited and inadequate to protect remaining populations. The USFWS seems to be especially concerned about the fact that mining claims in the area have remained active and exploration or mining could resume if economic conditions favor increased extraction. Mining-related activities could destroy populations indirectly by changing water flow patterns to them, even if they avoid the areas where plants are known to occur. Because the plant could be vulnerable to vandalism, critical habitat was not designated. Future activities by federal agencies, including the issuing of mining permits, will require USFWS consultation to evaluate effects on *Eutrema* populations. To date, USFWS staff have had no response from the mining industry on the listing of *Eutrema penlandii*.

Part of the listing controversy was the appeal of the Hoosier Ridge Research Natural Area (RNA) designation based on the mineral potential of the area. In 1992, mining claims were filed on an area within the proposed RNA occupied by one large population of *Eutrema*. According to Clint Kyhl of the USFS South Park Ranger District, St. Mary's Minerals conducted exploratory drilling in the area during the summer of 1993, but access roads and most holes were placed on private property. One hole was drilled on Forest Service land within the boundary of the proposed RNA, but it was placed in a existing roadway to minimize adverse impacts. To our knowledge, any effects of the drilling program on *Eutrema* have yet to be evaluated by botanists in the field--a project for next year!

USFWS botanist Lucy Jordan plans to contact interested parties to discuss recovery requirements for *E. penlandii*. Additional field work, including intensive mapping and counts, should be conducted next summer. This will be an important opportunity for CONPS volunteers to help increase our understanding of one of Colorado's rarest plants while working in a spectacular alpine setting.



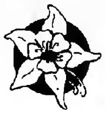
Eutrema penlandii Rollins. A. Whole plant in flower. A2. Basal leaf attachment. A3. Basal leaf. A4. Cauline leaf. B. Whole plant in fruit. C. Flower. D. Petal. E. Stamen. F. Gynoecium, front view. F2. Gynoecium, side view. G. Sepal. H. Flower, details. I. Fruit. I2. Cross section of fruit. J. Longitudinal section of fruit. K. Seed.

WINTER WORKSHOPS

The Colorado Native Plant Society workshop series was established in 1985 to provide members with winter-time activities when field trips are impossible. Workshops bring native plant lovers together with a well-informed instructor who may have photographs, herbarium specimens, live plants, or other materials for hands-on study. The opportunity to receive one-on-one instruction and informative lectures has made the workshop series one of the most popular Colorado Native Plant Society programs. Attendees need no special skills or background; a love of plants and the desire to learn are the only requirements. The goal is to demystify plant identification and to enhance our enjoyment and understanding of Colorado's native flora.

After planning and coordinating 100 workshops over the years, Bill Jennings has "retired" from his post as **THE** workshop committee. Susan Eubank, Barbara Siems, and Carol Dawson now share responsibility for continuing this important program. In early October members received a flyer in the mail announcing the fall workshops: **GENTIANS** with Carolyn Crawford and special guest Dr. William Weber on November 6 and 7, **KEYING TO GENUS IN BRASSICACEAE (mustard family)** with Dr. Robert Price on November 20 and 21, and **KEYING TO TRIBE IN POACEAE (grass family)** with Dr. David Buckner on December 11 and 12. Upcoming workshop topics include **SHOWY MONOCOTS (Alliaceae)** with Bill Jennings on January 29, **BIOLOGY OF DWARF MISTLETOES** with Brian Geils on March 12, **FIELD SKETCHING** with Carolyn Crawford on April 23, and **FORENSIC BOTANY** with Vickey Trammell on May7. Watch for details on 1994 workshops in the next issue of *Aquilegia*, or call Susan Eubank (303-277-9458) for current information.

The fee for each full-day workshop is $ 10 for CONPS members and $ 22 for non-members (see membership information on page 2). Payment is made on the day of the workshop. Checks should be made payable to CONPS. Help your workshop committee by filling out and mailing the registration form below, or call Susan Eubank (303-277-9458) to register for a workshop.



WORKSHOP REGISTRATION FORM

NAME: ____________________

ADDRESS: ____________________

____

HOME PHONE: __________ WORK PHONE: __________

Please register me for the following workshop(s):

Workshop: __________ Preferred day: __________

Workshop: __________ Preferred day: __________

Workshop: __________ Preferred day: __________

Mail to: Susan Eubank, CONPS Workshops, 710 1st Street, Golden CO 80403.

CHAPTER

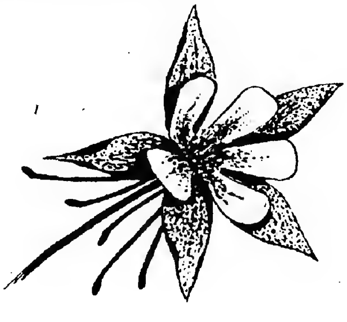
Boulder Chapter

January 11: Ferns of Hawaii
Join Tom Ranker, CONPS President and Curator of the University of Colorado Herbarium, for an exotic tour of Hawaiian ferns and a look at his interesting research. You may find out that Colorado and Hawaii share some ferns in common! Foothills Nature Center.

February 8: Research Natural Areas (RNAs), the U.S. Forest Service, and Biodiversity
Tom Andrews is a Research Natural Area Ecologist employed through a cooperative agreement between the U.S. Forest Service and The Nature Conservancy. Tom will describe his work on RNA designation and discuss implications for biodiversity protection on Forest Service land. National Institute of Standards and Technology (NIST), 325 Broadway, Room 1103.

March 8: Natural History of the Southern Rockies
Audrey Benedict, of *CloudRidge Naturalists* fame and author of *A Sierra Club Naturalist's Guide to the Southern Rockies*, will present a talk on the natural history of the the Southern Rocky Mountains. National Institute of Standards and Technology (NIST), 325 Broadway, Room 1103.

Monthly meetings are held from September through April on the 2nd Tuesday of the month at 7:30 p.m. at the Foothills Nature Center, 4201 North Broadway, unless otherwise noted. For more information call Lynn Riedel (666-6687) or Elaine Hill (494-7873). Bring a friend!



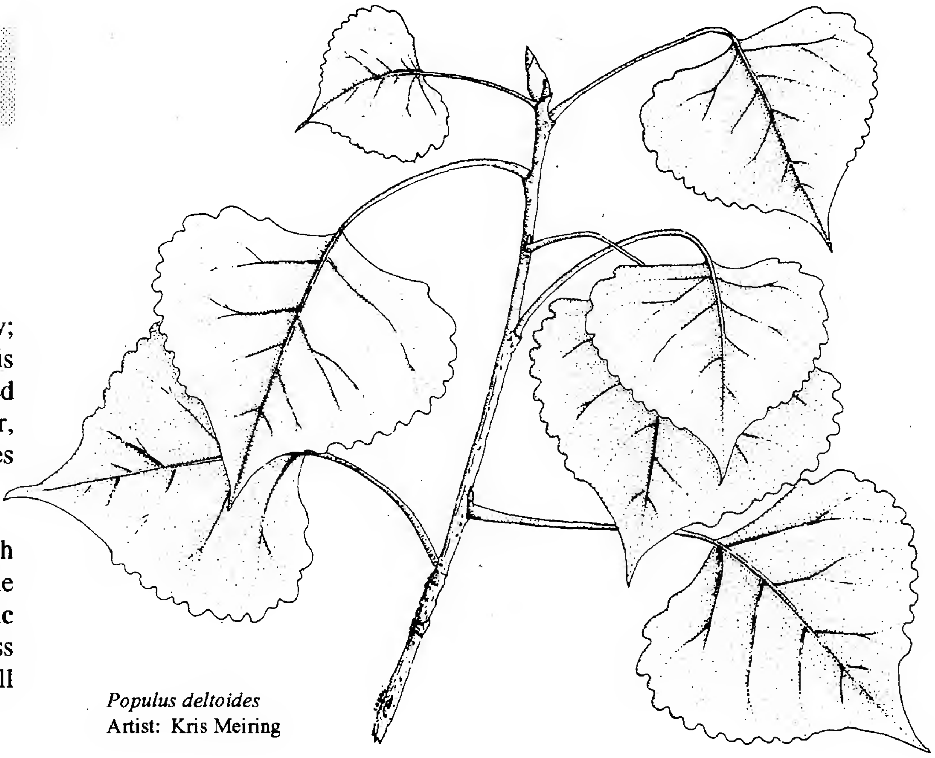
NEWS

Denver-Metro Chapter

January 26: To Be Announced

The Denver Chapter held elections recently; Jeff Dawson was elected president. Chris Hartung and Virginia Knowlton were elected vice president and secretary/treasurer, respectively. Watch for upcoming activities in the next issue of *Aquilegia*.

Monthly meetings are held on the 4th Wednesday of the month at 7:30 p.m. in the **Morrison Center** at the **Denver Botanic Garden** (DBG), 909 York Street, unless otherwise noted. For more information call Jeff Dawson (722-6758).



Populus deltoides
Artist: Kris Meiring

San Juan Chapter

Gretchen Van Reyper, the new president of the San Juan Chapter, can be reached at:
2126 L75 Road
Austin CO 81410 (303-835-3268).
Gretchen recently sent this report:

We had some good, educational field trips this past season in a variety of habitats, and many of the trips attracted non-members. Many thanks to all those who participated, especially the trip leaders. I look forward to seeing more of you in the season ahead. This year, I would like to get an earlier start on organizing western slope events; I'd like to encourage everyone out there to think of a good location in their area where we could have a plant hike. Let's do Gunnison, Ridgeway, Grand Junction, Cortez, and all points between! We have an amazing diversity of terrain to explore; I welcome the opportunity to discover more.

Is anyone interested in winter herbarium sessions in Montrose? The BLM office there has made space available to us. I may set a few dates when I will be there. Anyone interested could drop by for some botanizing and socializing. It would be a great opportunity to learn more about plant family identification and to figure out what some of those mystery plants are. Contact me if you are interested.

Here are some of the projects that our chapter is or can be involved in. If you get inspired, contact me for details.

The BLM would like our input in their Mesa Creek Coordinated Resource Management Plan (CRMP). They are interested in help with biodiversity issues and desired future condition (species composition) for specific areas. The Mesa Creek Resource Area is located on the Uncompahgre Plateau near Nucla. The BLM has been sending me updates on meetings, so I can tell you when and where.

The Durango Office of the U.S. Forest Service would like some dialog with us concerning threatened and endangered species in the San Juan National Forest. Presently, I am waiting for information on this program and what kind of input we may contribute. Anyone who lives in or near the San Juans would be a valuable resource for this project.

I am in the process of writing up a proposal for a native plant landscape garden in the new Confluence Park in Delta. Initial contact with local officials indicates they are receptive to the idea. Donations of time, material, and labor will be needed to see the project to completion. What a great educational tool this could be! Let me know if you could help. I recently became aware of a xeriscape/native garden at the main library in Grand Junction. One of our members, Betty Hall, just completed a guidebook for the garden. Add this one to your list of places to visit next time you are in Grand Junction during the growing season.

Does your community have some type of home and garden show? These are good opportunities to publicize CONPS and to increase interest and awareness in native plant issues...introduction of exotic species, conservation of endangered habitats, etc. Look into this in your town and check with me or a CONPS Board member for information or publications we have for distribution. Help spread the word!

These are a few of the things going on around here. Please consider how you might contribute some of your own skill and time to increasing awareness and appreciation for native plants. Lets combine our efforts to make a real difference!

Elk and Willows in Rocky Mountain National Park

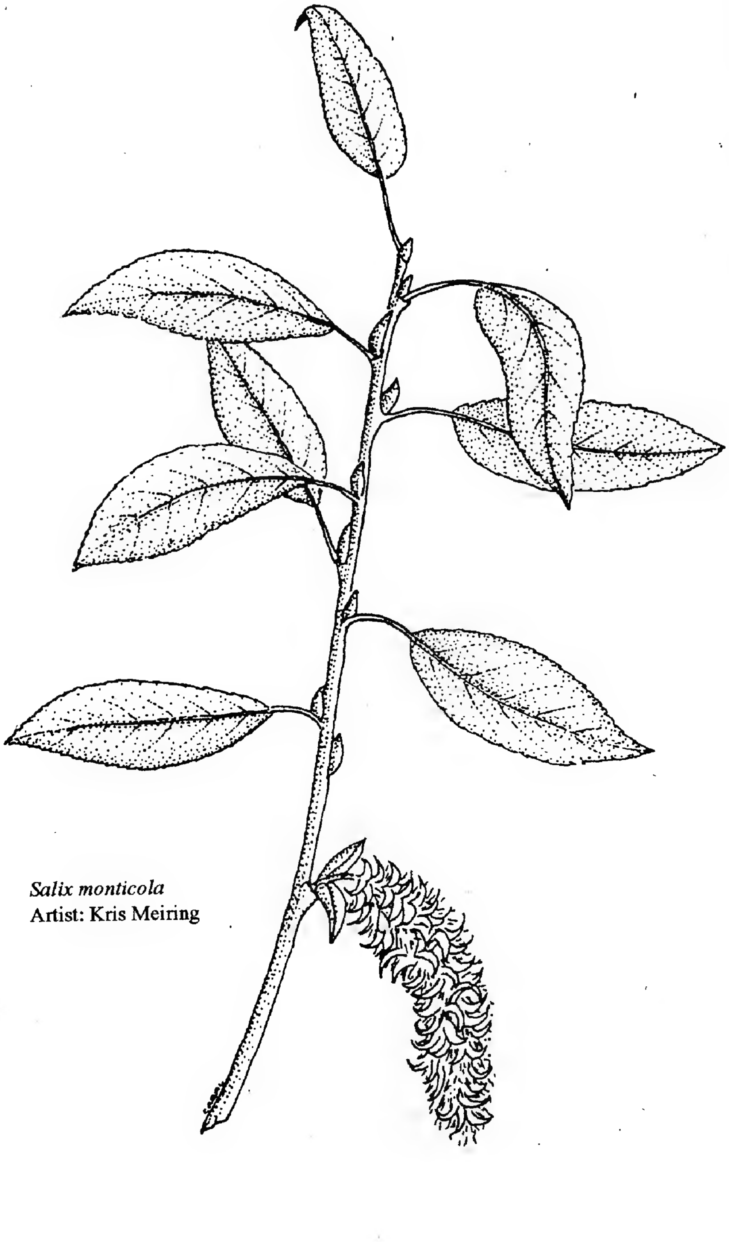
Sue Kamal*

The relationship between deer and elk populations and their habitat has been studied for many years (Stevens 1980). Biologists have investigated condition and trends of ungulate habitat in Rocky Mountain National Park (RMNP) since 1931. The role of historical ungulate populations versus present-day populations is not well understood. Many biologists believe that present-day populations are artificially high and may not be sustainable in present or future RMNP ecosystems.

Quantitative studies on winter range began in the early 1960s; browsed and unbrowsed vegetation was studied by comparing 0.1 acre to 3.0 acre fenced areas dominated by aspen, sagebrush, or willow with comparable areas that remained accessible to deer and elk. Transects were established inside and outside the exclosures; plants were measured annually for presence and canopy cover. Percent of browsed leader twigs on plants outside the exclosures was recorded. Repeated measurements on tagged plants in the transects were made over time. Common willows in the study area included *Salix monticola* and *S. petiolaris*.

Browsing suppresses cover and height of willows; browsed plants appear as if they have been hedged. Do browsed willows contain fewer defense compounds—tannins and phenols—than unbrowsed willows? Is seed production reduced in suppressed willows? Do browsed willows contain more protein than unbrowsed willows? Answers are being sought for these questions.

Work with willows this past summer also included biomass estimates, soil characteristics, plant water potential, and nitrogen (crude protein) levels in year-old shoots. Exclosed plants were clipped 100 per cent or 50 per cent, to simulate browsing, or left unclipped for comparison. Later in the season, to investigate for defense compounds, shoots were removed from the same willows, packed in dry ice, and sent to Brigham Young University for testing.



Salix monticola
Artist: Kris Meiring

The high density and quality of food available in wet meadows and lower elevation slopes explains the use of such sites for winter range. Elk consume shrubs in winter for protein, however, the digestibility of shrubs is low compared to grasses (Hobbes et al. 1979).

Significant herbivory by other creatures also occurs. Total biomass of ground squirrels (or grasshoppers!) can exceed elk biomass several times over during the summer months. What effect do these herbivores have on vegetation?

Frank Singer and others at RMNP are attempting to come up with some answers to the "problem" of elk and their habitat.

LITERATURE CITED

Hobbes, N. T., D. L. Baker, J. E. Ellis, & D. M. Swift. 1979. pp. 47-53, in Boyce, M. S., & L. D. Hayden-Wings, eds. *North American Elk: ecology, behavior, and management.* Univ. of Wyoming, Laramie.

Stevens, D. R. 1980. *Elk and Mule Deer of Rocky Mountain National Park, a 10-year study.* Rocky Mountain National Park Report. 163 pp.

* Sue Kamal was a seasonal researcher in RMNP last summer.

How To Collect *Eleocharis*

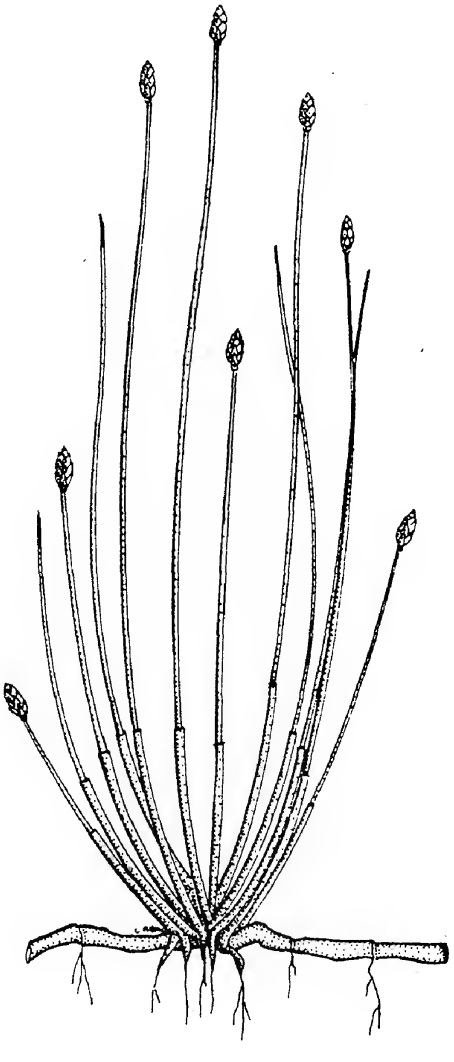
William A. Weber
Curator Emeritus
University of Colorado Herbarium

Of all the sedges, the genus *Eleocharis* or spike-rush, is the easiest genus to recognize, but the hardest to identify to the species. *Eleocharis* is unique in having a single spike of flowers, green photosynthetic stems, and lacking leaf blades. Wetlands, mudholes, and fens everywhere support stands of this really ubiquitous genus, yet very few people collect them, and when they do, the collections are usually taken when the plants are in flower and have not yet matured fruits.

Eleocharis is easily classified when mature fruits are at hand. There are either two or three styles, and the akenes are correspondingly flattened or three-edged. The base of the style, characteristically, is swollen and of a bony texture usually differing from the body of the akene, and in all but a few species this stylopodium sits on the akene like a crown, constricted at the base. In a few species, like *E. quinqueflora* and *E. parvula*, the stylopodium is not constricted and it is hard to see where the akene leaves off and the style base begins. In other species the stylopodium looks like a little turban. The akenes fall into two classes: the first, characterized by *E. wolfii* and *E. acicularis*, has vertical ribs and horizontal lines, the second being merely smooth or variously pitted.

Aside from the fruit, all of the important characteristics of *Eleocharis* species can be seen by examining the plants in the field. Are the stems flat or terete? Simply rolling the culm between the thumb and forefinger will determine this, as long as it is green and not dried out, because flattened culms tend to roll up when dried. How tall is the plant? Is it annual, with the stems bunched, or perennial with scattered stems and rhizomes? Are the rhizomes thin or thick?

I, for one, have often avoided collecting *Eleocharis* because mature fruits seem to be so hard to come by, but it is a very interesting genus, containing several species thought to be rare in our region. I recently went down to the Black Forest to see if I could locate *Eleocharis wolfii*, which had been reported in 1939 by the monographer, H. K. Svenson, on the basis of a single specimen from there, date unknown, by J. H. Christ, the specimen allegedly housed at Cornell University. It is an eastern species, and the logical place to look for this would be the Black Squirrel Creek between Eastonville and Black Forest.



Eleocharis palustris
Artist: Kris Meiring

Ron Wittmann and I found two kinds of *Eleocharis* on Black Squirrel Creek. One was the common *E. palustris*, and the other was a smaller, flat-stemmed plant that we thought might be what we were looking for. The plants were in full flower, and the fruits had not yet developed. Ron had a great idea that I had not thought of. He took a shovelful of plants, put them in a plastic sack, took them home and planted them in a pot watered from below, and within a week he had perfectly mature fruits. This simple technique guarantees perfect herbarium specimens that can be precisely identified. Unfortunately, our plant turns out to be another uncommon species, *E. parvula*.

Was *Eleocharis wolfii* actually ever collected in Colorado? To find out, we have to see the actual specimen cited by Svenson. Cornell University tells us that they do not have any plants collected by Christ. Could it be at Colorado College, where there are some Christ specimens? Negative. Where is Christ's personal herbarium (he was with the Soil Conservation Service)? The International Index to Collectors does not list his name. If we can't locate and verify the specimen's identity we will have to remove the record from the Colorado Flora. But as scientists it behooves us to pursue the matter as far as possible.

Getting a handle on *Eleocharis* should be an interesting, even exciting and rewarding challenge. We need to know a lot more about these plants and their distribution and role in wetlands in Colorado.

P.S. The specimen was recently discovered at CSU. It is *E. acicularis*!!

FIELD TRIP REPORT

Pawnee National Grassland
Led by Rick Brune and Jim Borland
Report by Paul Kilburn

The first weekend in June saw 20 eager CONPS members follow two leaders in 11 vehicles through this wonderful grassland area of long vistas, gravel roads, and very quiet and peaceful terrain some two hours north of Denver. We all were reminded again that this is an area to visit at least annually; and if you have never been there, put it on your "must visit" list for a late spring trip when the flowers and birds are at their peaks. The trip consisted of many stops at a wide variety of ecological and geological sites throughout both the western and eastern sections of this essentially treeless (except for some draws and streambeds) plain.

Stop 1. Grassland Introduction. Our leaders illustrated the grassland with maps and explained how these lands were subjected to extensive wind erosion during the dust bowl years of the 1930s and that the formerly private land reverted to the U. S. Forest Service. Now the land is grazed but cannot be plowed again. At this stop we observed as area south of the road still dominated by crested wheat *(Agropyron spicatum)* to which it was planted over 50 years ago. On the other side of the road, the land saw recent dust storms and was planted to native grasses in 1988.

Stop 2. Mountain Plover. In a section of open grassland, this candidate for endangered species status nests in open grassland in both California and Colorado, where it is confined to the Pawnee. While some of the birders managed an excellent view of the bird, most people went wild over the wide variety of flowering plants seldom seen in the foothills around Denver: *Senecio (=Packera) tridenticulatus, Lesquerella ludoviciana, Astragalus missouriensis, A. gracilis, Linum (=Mesynium) rigidum, Penstemon albidus, P. angustifolius, Lupinus pusillus, Sophora (=Vexibia) nuttalliana*, as well as many others also found in the foothills. We quickly added to the four page list of Pawnee plants. (Call Loraine Yeatts, keeper of CONPS plant lists if you would like a copy of the revised version [303-279-3427]).

Stop 3. Clay Barrens. We next visited an extensive clay barren area subject to severe erosion that limits plant colonization in certain areas. These occur infrequently in the Pawnee where headward stream erosion cuts into poorly cemented "clays", often resulting in vegetated cushion-plant pedestals. The major colonizer was *Arenaria (=Eremogone) hookeri*, sometimes resembling billiard balls, and on this trip a spectacular cluster of white blossoms. Geological expert Lynn Yehle indicated to us that "silt barrens" is a more accurate term, since the soils here were formed from loess and volcanic ash.

We then walked a short mile to a rocky outcrop harboring a couple of rarities: *Astragalus gilviflorus (=Orophaca triphylla)* and *Parthenium (=Bolophyta) alpinum*. We missed them in bloom, perhaps three weeks earlier, but found a lot of *Astragalus spatulatus*, a small, easily identified species with a single leaflet.

Stop 4. Willow Creek. A few more miles downstream the creek actually flows at this time of year through a series of small ponds. These are ideal habitats for the rare plains topminnow, restricted to these disjunct clear ponds in the Great Plains. Several of the ponds had no minnows; in others they were abundant and up to four inches long, with the colorful tail and fins clearly evident. At this stop we finally had lunch and saw *Astragalus kentrophyta*, sand verbena *(Tripterocalyx micranthus)*, as well as a few plants of blue-eyed-grass *(Sisyrinchium demissum)*, a first for the Pawnee?

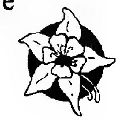
Stop 5. Crow Valley Campground. Dinner and bedtime were welcome after this long day. This pleasant campground just north of Briggsdale on Colo. 14 had water, pit toilets, and plenty of open land for tents, campers, and even trailers. Since the night was clear, some hardy souls did not even pitch their tents. The site also had an abundant bird fauna with several eastern species present, including the Baltimore oriole and Eastern blue jay, in the large cottonwood trees along the dry stream bed.

Stop 6. *Marsilea mucronata*, the hairy pepperwort or 4-leaf clover fern. Not rare, but easily overlooked, healthy plants with sporocarps were seen along the edges of pools in nearby Sand Creek.

Stop 7. Dave's Draw and Limber Pine. After a stop in this piedmont portion of the Pawnee to see a raised rock ridge, which was a "fossil" stream bed housing many familiar plant species and one fern, we headed to the badlands and rimrock eroded by North Pawnee Creek, which has carved out the famous Pawnee Buttes and where limber pine, *Pinus flexilis* and western red cedar, *Juniperus (=Sabina) scopulorum*, occur. We also saw the spectacular yellow *Oenothera (=Calylophus) lavandulifolius, Delphinium geyeri, Cryptantha (=Oreocarya) cana*, and *Haplopappus (=Stenotus) acaulis.*

Stop 8. Lunch and the Buttes. After a lunch at the beautiful overlook, about half the group left for home, while the rest (the more rugged plant lovers?) hiked to the first butte and were rewarded with a Prairie Falcon on its nest high up on the rim, as well as more new plants: bush morning-glory *(Ipomoea leptophylla), Artemisia (=Oligosporus) filifolia*, and an abundance of the rare *Psoralea (=Psoralidium) esculenta*. And, of course, a couple of new *Astragalus*, getting us over 20 for the trip. By now most of us had given up trying to key these out and decided that next time, we will take Loraine along with her key.

The word **SUPER** summarizes this trip in the minds of all. A great thanks to Rick and Jim for their time and leadership. The history, geology, ecology, and flora were splendid, but the usual fine people of the Native Plant Society were the best of all.



An Eightieth Anniversary

William A. Weber
Curator Emeritus
University of Colorado Herbarium

Field trips are fun, and they have been popular for a long time. Here is an account of a very important field trip. A feature of the 1908 International Geographical Congress in Geneva was a field trip to the Swiss Alps, led by the famous plant geographer, Dr. C. Schröter. It was a small affair, but it encouraged another plant ecologist, A. G. Tansley, of Cambridge, to stage a longer four week excursion in England, during the annual meeting of the British Association for the Advancement of Science. Discussions that followed this excursion determined that future ones should be invitational and hosted by people in the countries where the trips were to be held.

The first of these International Phytogeographic Excursions took place in the United States in 1913, just before the outbreak of World War I, at the invitation of Dr. H. C. Cowles of the University of Chicago and Dr. F. E. Clements, then of the University of Minnesota. About 25 people participated, including several of the most important European and American plant ecologists and one taxonomist, Dr. Adolf Engler himself. The Americans included Clements, Cowles, George Fuller, Univ. of Chicago, and G. E. Nichols of Yale, and some of the best known Europeans were Ove Paulsen, Copenhagen, Carl Schröter and Eduard Rübel of Zürich.

Hymenoxys grandiflorum
Artist: Janet Wingate

The field trip stages were extraordinary for the time: the Great Lakes area near Chicago to study oak and beech forests and dune succession around Lake Michigan; the Prairie Province near Lincoln, Nebraska; the Great Plains, near Akron, Colorado; Colorado Springs and Pikes Peak, where Clements had his high altitude transplant gardens; the Great Basin around Salt Lake City; the Yakima Valley and the Pacific Coniferous Forest around Mount Rainier; Crater Lake; Mt. Tamalpais near San Francisco (where they were led by Alice Eastwood, one of our original Colorado botanists), Monterey and Point Lobos; Yosemite National Park; the Salton Sink; the Sonoran desert around Tucson, the Santa Catalinas; and the Grand Canyon. On the return trip they encountered floods in Texas, where their railroad line was damaged, and visited a cypress swamp near New Orleans!

Bettie Willard and I staged a cross-country, 21-day excursion from Denver to Seattle for the International Botanical Congress in 1969, Bettie having made all the arrangements for transportation, stops and local guides. Our itinerary was extremely similar to the 1913 excursion; it was a huge project. We traveled by bus. The 1913 trip traveled from place to place by train, but what kinds of vehicles were available for the side trips? Did they carry Granola bars?

For Coloradans, the big significance of the event was that for the first time a group of European and American taxonomists, ecologists, and plant geographers were able to get a first hand look at the Colorado Rocky Mountains, which they had known previously only from the 1861 collections of C. C. Parry, E. Hall, and J. C. Harbour, distributed in sets to several European herbaria. It was also the first chance for an international group to meet in the field here and discuss mutual questions about the flora. And it was on Pikes Peak that Ove Paulsen, the Danish plant geographer, collected a litre bottle full of *Koenigia islandica*, which he never reported. These sat in the herbarium at Copenhagen for fifty years before I discovered the plant again on Mount Evans.

The International Phytogeographic Excursions have continued to the present day, and I have been fortunate to participate in its trips to Finland and North Norway, The French and Italian Alps, Greece and Crete, and Japan. They provide very rich experiences for a great variety of scholars. The programs and reports have been published in volumes of the *Berichte des Geobotanischen Institutes der eidg. Techn. Hochschule Stiftung Rübel*, in Zürich. The account of the first excursion of 1913 was published by Rübel in *Botanischer Jahrbücher* 53(3-5):1-36. 6 plates. 1915.

The Passing of Eilif Dahl

William A. Weber
Curator Emeritus
University of Colorado Herbarium

News has come in a pamphlet from *Norsk Botanisk Föreningen* that Eilif Dahl passed away some time early this year. His name may not be familiar to the younger generation, but for some of us he was extremely important to our understanding of the Colorado Flora. Eilif Dahl was the preeminent Norwegian plant ecologist and plant geographer who wrote a classic monograph on a Norwegian alpine region, Rondane, and was especially interested in the phenomenon of timberline. I first met him at the Mountain Research Station (then called Science Lodge) when he was a visiting professor at C.S.U. I was just starting out to learn something about lichens and, in one day in the field on Niwot Ridge, Eilif taught me how to recognize most of the most conspicuous lichens of the tundra. In 1957, Eilif welcomed me to Norway and gave me and my family an extraordinary analysis of the famous Vigeland statuary park in Oslo. He was a botanist of great talent and wide interests beyond plants. He was the author, with Hildur Krog, of a fine little field guide: *Macrolichens of Denmark, Finland, Norway, and Sweden*, that covers the alpine lichens of Colorado quite well.

During World War II, Eilif was very active in the Norwegian underground. He had to flee to England for a while and there was trained and took part in a successful raid in Norway on the power station of Rjukan. In order to disguise himself when going around in Oslo and other areas where people knew him, he simply dyed his hair a shocking red, and he was amazed that practically nobody recognized him in spite of his hunchback, even when he passed right by old friends (this story from Doris Löve).

My favorite story involving Eilif has to do with a trip to Summit Lake on July 30, 1953. The rare arctic grass, *Phippsia algida*, had been rediscovered a few years before, and the foreign visitors were already beating a path to the place. Just the week before, I had taken George Neville Jones (Flora of Illinois) up to show and tell, and we had discovered the rare saxifrage. *Spatularia foliolosa*, on the hummocks of the inlet. Now we had Eilif and several notables from Fort Collins, one a soil man to examine the permafrost level. On the drive up the mountain, Eilif jokingly asked me, "Well Bill, and what shall we find today?" I reached down into my mental list of the most unlikely Arctic plants and said, "How about *Koenigia islandica*?" We all had a good laugh out of that, because it had to be an impossibility—a species restricted to the shores of the Arctic Ocean. We got out of the car at the lake, and almost immediately Eilif was on his hands and knees, not a hundred yards from the road, saying "What was that about *Koenigia islandica*? For here it is!" In retrospect, I recalled that Neville and I had passed over what looked like little red seedlings the previous week. There shouldn't have been any seedlings there, but alertness comes after awareness, which is why we treasured our foreign visitors who had first-hand knowledge of the Alpine-Arctic floras. Perhaps my suggestion wasn't out of thin air, after all.

The story has an anticlimax. Some years later, Erling Porsild, the great Canadian Arctic botanist, came to Boulder, and we visited the site. He said, "Do you know, Bill, that in Copenhagen there is a collection of *Koenigia* from Colorado that was collected years ago by Ove Paulsen, at a place called "Severn Lake"? Severn Lake turned out to be Seven Lakes, on Pikes Peak, and the occasion was the first International Phytogeographic Excursion of 1913 (see *An Eightieth Anniversary*, this issue). When I visited Copenhagen some years later, I asked to see the specimen, and found a note written on the label — See Alcoholic Collection. They brought me a liter bottle completely stuffed with the little *Koenigia* plants, collected by Paulsen. He never realized that this had never been found in the United States before, and never published the record!

Diana Mullineaux sent this exerpt from an Arizona State Park publication:

DO NOT PICK, twist off, sever, cut, clip, snip, snapoff, pluck, pinchoff, pull, bend, crush, pare, cleave, divide, break, touch or take, borrow, steal, bite, eat, remove or otherwise harm, mutilate or endanger

THE PROTECTED NATIVE PLANTS.

It appears that collecting ethics and protection of native flora and fauna is of concern to many people around the world. You can help us here in Colorado by sending in your CONPS memberhip renewal today! While you're at it, write to your senators and representatives and ask for their strong support of the ESA!

Another friend sent us a photo of this sign from Swaziland:

USUTU NATURE PRESERVE

PLEASE DO NOT PICK
twist off, sever, cut, clip, snip, snap off, pluck, pinch off, pull, bend, crush, divide, break, touch or take, borrow, steal, remove, crumple, shatter, shiver, batter, upset or otherwise harm, mutilate or endanger

THE FLOWERS
ferns, trees, shrubs, grasses, mosses, lichens, birds, bugs, beetles, buck or staff

DO NOT LITTER THE PRESERVE

BOOK REVIEW

Rick Brune

The Gardener's Guide to Plant Conservation. 1993. Nina T. Marshall. World Wildlife Fund and The Garden Club of America. 187 pages. paper. $12.95.

Winter daffodil (*Sternbergia candida*) was described as a new species in 1979. As a result of collecting for the garden trade, the species may be extinct in the wild today.

Minnesota trout lily (*Erythronium propullans*) was given protection under the Endangered Species Act in 1986. The reason? Over collection.

Before long, we will be getting the new crop of garden catalogs with their enticing plant selections. A visit to the garden center is not far off. Most of us would not willingly purchase a plant if we knew that our purchase would endanger the survival of that species. How do we know, however, that those irresistible bulbs were not collected and/or exported illegally, or that those trilliums were not dug illegally from the wild?

The Gardener's Guide to Plant Conservation lists sources for approximately 500 species in the garden trade today: propagated, wild collected, or both. A quick look through the lists shows about 50 species native to Colorado. In addition to the plant lists, this book provides a fascinating look into the history of the wild plant trade and the trade as it exists today.

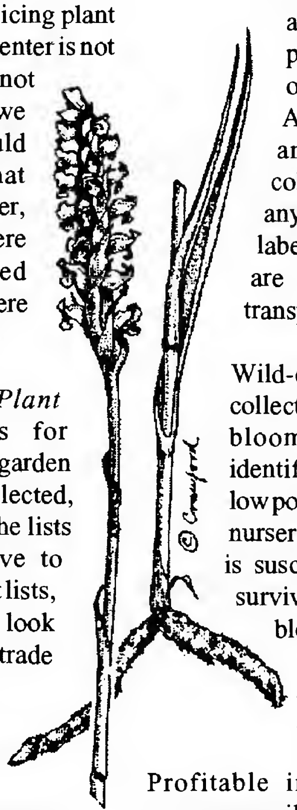
The list of plants is divided into four sections; North American Wildflowers; Bulbs; Insectivorous Plants; and Terrestrial Orchids. In addition to the source for each species, a short paragraph describes its geographical range, method of propagation if propagated, and status (rare, common, endangered, etc.).

For example, the source for yellow star grass (*Hypoxis hirsuta*) is both wild collected and propagated by seed and division. Yellow star grass ranges from Maine to Florida and Texas. It is presumed extirpated from Colorado and Maine, imperiled in Delaware, and protected in New Hampshire.

New England aster (*Aster novae-angliae*), on the other hand, is essentially all propagated. It is considered critically imperiled in Oklahoma despite its wide range throughout North America.

The Bulbs chapter includes true bulbs and plants with tuberous roots, corms, or rhizomes. Trilliums (*Trillium* sp.) have long been a favorite garden plant and are offered widely in catalogs. Collectors and logging have nearly extirpated them from Colorado. Nurseries propagate trilliums on a small scale but wild-collected plants far exceed propagated ones in the trade. North American plants sold in Europe and Japan are mostly wild collected in the U.S. Beware any plant, trillium or otherwise, labeled as "nursery grown"; they are usually wild-collected and transplanted into pots.

Wild-collected bulbs are usually collected when the plant is in full bloom to ensure correct identification. Because this is the low point in the plant's energy cycle, nursery stock often lacks vigor and is susceptible to disease. If they survive, they may take years to bloom.



Spiranthes romanzoffiana
Artist: Carolyn Crawford

Profitable insectivorous plant sales encourage wild-collecting. Wild-collected Venus flytraps (*Dionaea muscipula*) retail for as much as $5.00 with collection costing as little as 7 cents. In 1990, 1.1 million were exported overseas including an estimated 300,000 wild specimens. This species is protected in North and South Carolina.

Terrestrial orchids are tempting buys even though they almost never survive garden conditions because of their specific habitat requirements. Trade in species native to the U.S. is concentrated in the lady's slipper orchids (*Cypripedium* spp.). Most plants are wild in origin except for certain specimens of the yellow lady's slipper (*Cypripedium calceolus*). Asian species such as *Bletilla* and *Pleione* are also often wild-collected.

In addition to the lists in the book, *The Gardener's Guide to Plant Conservation* provides a good set of guidelines for determining if a plant is wild collected:

1. Check labels. Are they in accordance with agreements now statutory under Dutch law? Are they labeled at all?
2. Look for disclaimers and information about plant origins in catalogs.
3. Critically evaluate information about plant origins. Watch for ambiguous phrases like "nursery grown". Question propagation methods.
4. Use price as an indicator. Propagated plants take more time and care and, therefore, cost more. They are also usually healthier.
5. Question the vender about sources. If they do not know, buy elsewhere.
6. Consider growing plants from seed.
7. Express your concerns to people selling wild-collected plants or plants of unknown origin.

The Gardener's Guide to Plant Conservation is an excellent resource for the concerned gardener who wants to avoid depleting wild plant populations. There are undoubtedly wild-collected plants in the trade that are not in the book, but it covers most of them. Conspicuously absent are trees and shrubs.

This book is also a good gift for a garden-minded friend. Give a copy to your favorite garden center or nursery.

The Gardener's Guide to Plant Conservation will be available early in 1994 from Velma Richards (794-5432) at the discounted rate of $10.00 + tax + $2.00 shipping. Copies can also be purchased directly from World Wildlife Fund, P.O. Box 4866, Hampden Post Office, Baltimore MD 21211, (410) 516-6951.

CALENDAR OVERVIEW

1993-94 Workshops

Jan 29	**Showy Monocots (Alliaceae)** with Bill Jennings
Mar 12	**Biology of Dwarf Mistletoes** with Brian Geils
Apr 23	**Field Sketching** with Carolyn Crawford
May 7	**Forensic Botany** with Vicky Trammell

Chapter Meetings

Boulder Chapter

Jan 11	Ferns of Hawaii
Feb 8	Research Natural Areas (RNAs), the U.S. Forest Service, and Biodiversity
Mar 8	Natural History of the Southern Rockies

Denver-Metro Chapter

Jan 26	To Be Announced

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